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ABSTRACT

During 1974-75, four community colleges of the City University of New York participated in a demonstration project utilizing a computer-assisted guidance system to provide occupational and educational information to students. At each college, a counselor in the office of the dean of students supervised the project and, with the help of student aides, conducted all publicity and recruitment, orientation, follow-up, and recordkeeping. The data bank used was the Guidance Information System marketed by Time Share Corporation, which consists of four subfiles: (1) a four-year college file containing information on approximately 1,600 colleges throughout the nation; (2) a national two-year college file covering approximately 1,000 junior colleges; (3) an occupational file with information on about 1,300 of the more than 20,000 occupations in the Dictionary of Occupational Titles; (4) a small scholarship file. At least 635 different individual students requested computer information a total of 868 times. Despite the attempt to give priority to students in occupational curricula, at least half of these students were enrolled in liberal arts programs. Details of the project design, implementation, use, and reactions to it are given, and recommendations are made. (NHM)

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A DEMONSTRATION OF A COMPUTERIZED INFORMATION SYSTEM IN FOUR URBAN COMMUNITY COLLEGES

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Report No. CASE-20-75

September 1975

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A DEMONSTRATION OF A COMPUTERIZED INFORMATION SYSTEM IN FOUR URBAN COMMUNITY COLLEGES

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and the
Division of Occupational Education Supervision
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FOREWORD

Early attempts at computer-assisted guidance activities resulted in varied claims of effectiveness or lack of it. Both protagonists and antagonists professed "knowledges" that were, in the main, hypotheses and/or judgments. What little hard data that did exist centered about cost factors and were based on diverse systems serving middle class high school students in suburban environments.

The Institute's initial effort at contributing to the fund of knowledge was to conduct a large-scale feasibility study involving five urban (New York City) high schools. The data, involving over 6,000 cases in one academic year, was supplemented by an impact study of selected variables.

Interim findings were so encouraging as to warrant a proposal to the Bureau of Two-Year College Programs of the New York State Education Department's Office of Occupational Education. The intent was to ascertain the viability of computer-assisted guidance for selected populations of Four City University of New York community colleges: students who may have selected occupational education programs inappropriate to their interests, those seeking additional information relative to specific occupations within job families or occupational clusters, those seeking training not offered at their institution, etc.

This report reflects the results of the first year of that project. In addition to data enabling descriptions of implementation procedures, reports of use, and the like, the exploratory nature of the project produced many questions which encouraged further study and modifications of management procedures. A second year study is currently under way which should provide additional information to enable decisions regarding replicability.

Leo Cohen, Director
IRMIS

ACKNOWLEDGMENTS

Whatever merits this project possesses will not be adequately by what is said in the acknowledgements. But really, without the active support of the following people and institutions, this project would not have come to fruition.

The Presidents, together with the Boards of Trustees, at Bronx Community College, New York City Community College, La Guardia Community College, and Staten Island Community College, chose to commit themselves to a hazardous material endeavor. I am indebted for their existence of vision and for their generosity in assigning coordinating responsibility to Alice Kaplan, Herb Van Patten, Pia Gabrielli and Marcia Gumpel, and Paul Siegel. Of talent and creativity, concern for students, and willingness to undertake a new regent, once contributed positively to the outcomes, without doubt these college coordinators played the most crucial part of all.

I am also indebted to many other people who worked on this project: Russell Barton, both for his excellent secretarial skills and for his editorial talents; Television Marketplace, for her extraordinary assistance with difficult administrative matters; Melanie Dowling for a variety of small [illegible] that help make the large one; Lee Cohen, Director of CUNY, for his help through some of the darkest hours; Dan Watson, Director of CUNY, for his help in keeping it on course; and the faculty of the State Education Department whose guidance was invaluable from the very beginning.

Although recognition has been accorded to the five people listed on the cover, I want to acknowledge their contributions to greater detail. Linda Chrisman, CUNY Associate, was not a formal member of this project's staff, but was, unquestionably, indispensable of the project team. Dr. Chrisman has been a creative and stimulating colleague from the outset and has been [illegible] confidence in her abilities. The competence and diligence of the graduate assistants--Janet Beck, Arnold Jaffe, Lawrence Killian, and Joseph Maltese--need no further mention. Suffice it to their testament to what they were not, their refusal to "take no talk," and their provocative questioning that so [illegible] only spoke to the project's advantage but made my work more interesting. Although I must take ultimate responsibility for any errors in judgment or interpretation, final decisions were often a result of heated professional disagreements in which I emerged victor by sheer weight of authority.

Barbara G. Brandt
Project Director

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for U. S. use Experimental Only.

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Figure 1

Sample Interaction Employing Three Basic Instructions to the Computer
(Search Mode)

```
OCCUPATIONAL INFORMATION READY

?A243

ADD 243      JR. COLLEGE. ASSOCIATE DEGREE
 234 OCCUPATIONS QUALIFY
?A2

ADD 2        BUSINESS & OFFICE
 33 OCCUPATIONS QUALIFY
?S222

SUBTRACT 222 WEAK ARITHMETIC SKILLS
 14 OCCUPATIONS QUALIFY
?P
 263
COLLECTION CLERK. CLERICAL
DOT# 248.388

 316
COURT REPORTER. CLERICAL
DOT# 202.388

 361
DIGITAL COMPUTER OPERATOR
DOT# 213.382

 519
FOREIGN LANGUAGE STENOGRAPHER
DOT# 202.388

 665
LAW CLERK/PARALEGAL ASSISTANT
DOT# 119.288

 674
LEGAL SECRETARY
DOT# 201.368

 746
MEDICAL SECRETARY
DOT# 201.368

 747
MEDICAL STENOGRAPHER
DOT# 202.338

 971
RESERVATION AGENT. AIR TRANS.
DOT# 912.368
```

Computer states that the data base is available

The user instructs the computer to only consider occupations requiring a two-year degree

Computer responds with the number of occupations it states that require a two-year degree

User narrows by instructing computer to consider occupations in the Business and office cluster from among those requiring a two-year degree

Computer responds with the number of cases that meet the two requirements

User instructs the computer to consider occupations that require arithmetic skills; computer responds with the number of occupations that qualify under the three requirements.

User request a printout of the 14 occupations that qualify

The list includes: the data base number the occupational title the D.O.T. number

...more...

which has been annotated, the user's instructions and computer responses simulate a rudimentary conversation.

The Guidance Information System (GIS) consists of four subfiles or data banks of information:

- a four-year college file containing information on approximately 1600 colleges throughout the nation;
- a national two-year college file covering approximately 1000 junior and community colleges;
- an occupational file with information on about 1300 of the more than 20,000 occupations in the Dictionary of Occupational Titles;
- and a small and very inadequate scholarship and financial aid file.

GIS was designed for high school students and is marketed nationally. To the best of our knowledge, it has not been used at the postsecondary level before.

To operate GIS, the user must be familiar with at least four or five basic (of a total of 12) commands. These basic commands tell the computer what to do. They instruct the computer to: consider or include a characteristic; omit a characteristic from consideration; erase from consideration a characteristic previously included; print either the names of the colleges or occupations that qualify (if the number had been narrowed to 25 or less); or print detailed information about a particular occupation or college. Although the GIS system can be adequately employed with these five basic instructions, finesse is best achieved with mastery of all.

In addition to the instructions which tell the computer how to retrieve, there are characteristics that describe the content of the information--i.e., what can be retrieved. In the occupational data bank, these characteristics are arranged by categories of occupational clusters, interests, aptitudes, and formal and informal education. For colleges, the available information is arranged by academic programs of study, geographical location, coeducation, religious affiliation, admissions information, competitiveness, accreditation, and so on. The complete list of characteristics is contained in the Student Study Guide, of which 100-200 copies were given to each college. A User Manual, which lists the names and retrieval numbers of all colleges and occupations stored in the computer, completes the written materials.

Participating Community Colleges

A modification of the original proposal called for the conduct of the project in four community colleges in the City University of New York. Underlying the reduction in the number of sites was the belief that an intensive effort in fewer colleges would provide more information to guide future directions.

The four community colleges selected are representative of the diversity of organizational and staffing patterns, student body composition, and curricular emphases of two-year colleges in the State. These four community colleges--Bronx, La Guardia, Staten Island, and New York City[1]--were invited to participate in the project. The college presidents all expressed keen interest, and in a letter of commitment indicated a willingness to provide data for the evaluation, and to contribute staff time and telephone costs.

College A, founded in 1957, currently occupies the old campus of a private university. Slightly more than half its 13,000 predominantly black and Puerto Rican students attend classes on a part-time basis, mostly during the day. The student body is approximately evenly divided between career and transfer programs.

College B, composed of mostly black and Puerto Rican students, is the largest community college in the CUNY system. The proportion of students in the transfer programs, 25 percent, is the smallest of any school in the project. In addition to offering all the traditional career programs, College B is known for providing a large number of unique ones. Most courses at this mid-city campus meet two days a week--Mondays and Wednesdays, or Tuesdays and Thursdays--so that most of the student body is on campus during one of the two days on which the computer was available. Approximately 60 percent of the students attend evening classes.

College C is one of the smaller and newer of the colleges in the system, enrolling approximately 4200 students. Largely experimental in orientation, College C boasts of being open 24 hours a day and seven days a week. Located in a heavily industrial area of the City and utilizing converted factory buildings, approximately half the student body is enrolled in career programs. This institution is proud of the fact that at the end of the two years, more than half the graduates continue with some form of education. Like College A,

[1]Hereafter coded by letters A-D in scrambled order to assure anonymity.

approximately 60 percent of the students attend classes during the evening.

College D has been described as a suburban school, enrolling 11,000 students. The student population is predominantly a white working class group, 55 percent of whom attend classes during the day. College D has, by far, the greatest proportion--63 percent--of students enrolled in transfer programs. (The similar proportions for Colleges A, B and C respectively are 50%, 25%, and 50%.)

PROJECT DESIGN

Priorities and Responsibilities

In Colleges A, C, and D, introductory meetings were held with deans of student services and the counselor who would be assigned the ongoing responsibility for coordinating the activities. With the exception of College B, these first meetings between IRDOE staff, deans, and coordinators took place in July 1974; the first meeting with the College B coordinator was held in early September, after she had returned from vacation and was informed of this assignment. The purpose of these first meetings was to describe the computerized system; discuss the "best" location for the teletypewriter terminal; arrange for telephone service; plan for the evaluation; allocate college staff responsibility; and disseminate priorities for student users. (See Sample Agenda, Appendix A.)

Priorities for Students. To conform with funding source guidelines, which limited the student target population to occupational students, priorities were established and administrative procedures were designed to facilitate adherence to them. To this end, it was agreed that the following groups of students, in order of priority, would be encouraged to make use of the system:

- students enrolled in an occupational curriculum desirous of changing curriculum; this included students seeking alternative options within a program of study (e.g., from one technology to another), and students seeking occupational alternatives outside their initial chosen field of study;
- student leavers and potential dropouts of occupational curricula--the dissatisfied--who need additional career counseling as determined in exit interviews;
- student "drop-ins," including those in extension programs, evening classes, and so on, who are searching for an occupational curriculum and/or who are in need of retraining;
- and, if time permitted, dissatisfied students in liberal arts programs, specifically identified by the counseling staff as having interest in and potential for success in an occupational program.

Preliminary discussions with the college staffs indicated that some steps had to be taken to insure conformity to these guidelines since all staff that we spoke with were in very much agreement that the need for this type of service lay primarily among the "liberal arts" students. As they described these students, most are not as much committed to the liberal arts curriculum as they are undecided or ambivalent about a career/occupational alternative.[1] While assuring the college staffs that these students were not excluded from availing themselves of the computerized information service, this group was of lesser priority. To insure that the colleges did make an attempt to recruit users in order of priority, the following decisions were made:

- priority guidelines would be disseminated within the college;
- the terminal equipment was to be placed, where appropriate, within existing career resource centers or career libraries;
- the computer facility was to be integrated, where possible, with classes or groups whose purpose was to direct or redirect students into occupational curricula;
- any individual not enrolled in an occupational program (and this included extension and evening students, adult education students, and liberal arts students) needed to be identified by or recommended by a counselor to use the system; and
- finally, and as a last resort, access to the system might be restricted to the occupational data banks.

Community College Responsibility. In addition to paying telephone costs (estimated to average approximately $70 per month per school under conditions of maximum utilization), the colleges agreed to adequately staff the project. In each instance, ongoing, day-to-day responsibility for the project was given to a member of the student services department. However, since no released time arrangements were made, the counselor at College B maintained her usual case load in addition to this project, while the coordinator at College D continued to be responsible for all departmental testing. In two colleges, A and C, in addition to their regular duties (which included a full counseling load) and responsibility for this project, the counselor-in-charge had other special assignments for the 1974-75 school year: the College A counselor coordinated another HEW-funded IHEOE-managed project, while the person at College C (the coordinator of the Career Resource Center) also functioned as

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[1] In part, the composition of the liberal arts group is an artifact of the City University policy that requires entering freshmen to indicate a major field of study at enrollment.

the college's transfer and "middle college" specialist. When asked their opinion about why they were given the responsibility for the computer project, three of the four coordinators said it was because of their personal and organizational abilities, interest in experimentation, and the "naturalness" of the fit between the project demands and their regular duties; the coordinator of College B believed that she did not know why she had been assigned.

The coordinators of College I-A reported that in a typical week they devoted less-than-10 percent, 15 percent, 20 percent, and 35 percent of their time, respectively, to the computer project. Coordinators C and D felt that the allocation of their time had stayed relatively constant over the project's duration, while the coordinators at A and B believed that as the project progressed, they spent less time working with it. With the exception of College D, all colleges employed either work-study students or student aides, primarily for the purpose of operating the terminal equipment. (The time allocation and activities of all school personnel involved in the project will be described below, see Implementation.)

Project Evaluation

A two-pronged evaluation was planned to provide a basis for future programmatic direction. To meet the main first year evaluation objectives, IDCE staff undertook continuous monitoring of the progress and problems of implementation, through both structured and unstructured instruments and on-site observations. To be assessed were such things as hardware malfunctions, time used, number and description of students exposed to the computer experience, outside supportive activities, adequacy of the information provided by the automated system, and arrangements for student access, orientation, and followup. A major offshoot of the monitoring function was to enable staff to take corrective action during the course of the demonstration. The two colleges, B and C, that responded to our inquiry, estimated that all recordkeeping for evaluation purposes never exceeded more than 10-15 percent of the total time they devoted to the computer project.

Several instruments were designed to systematically monitor progress. (See Appendix B.) A Hardware Monitoring Checklist form was distributed to each college coordinator. This checklist, a similar version of which had been used for one year at the high school level to record and describe

hardware problem (phone, terminal, and computer), explored little time to complete and practical valuable data about such things as the efficiency of the materials and the ease in [illegible] to learn to diagnose problems. Two such tests are to be filled out by each subject each day they work on-line. A total of 28 such tests, less than 10 percent of the total possible orders, were completed. We received 3 such tests [illegible] a set A, 6 [illegible], and 17 tests in [illegible]. After the first month or so of operation, no tests were ever received, despite repeated nudging on the part of BBN staff.[1] While part of the hardware problem is due to error within the first couple of months, we attribute the villages' non-compliance with our requests to several factors, including the fact that they were voluntarily [illegible] the computer (i.e., if the equipment is not used, it cannot perform [illegible]), and our inability to communicate to all the different staff and students alike that this information was important.

Crucial information about the way the computer was structured [illegible] two manners, a [illegible] and a [illegible] procedure. Recently it. After we were certain that the [illegible] procedures are [illegible] accurately, we informed the villages that they could eliminate the [illegible] tests. It should be noted that although the [illegible] procedure is accurate, it of course cannot and reports [illegible] that information which is [illegible]. As can be seen in Table 3 (p.17), there is a relatively large amount of "unknown" [illegible], some that was used but for which the villages neglected to [illegible] the user at the program.

The final monitoring instrument, the [illegible], was [illegible] and developed to record conversations and [illegible] in the use of the information in the computer data bank, as well as to keep track of information that was particularly beneficial to students. Like the other procedures, this form was rarely if ever used by the village coordinator or aides. There is here sufficient evidence that our secondary school project that there are errors, omissions, and confusions in the second information, we have [illegible] to complete these forms relative to other considerations. As an hypothesis, it is probable that this form did not produce the motivational feedback because the staff did not access the

[1] We have [illegible] estimate of the number, duration, and severity of malfunctions, since we were always informed by telephone when access to the computer was not forthcoming.

project approval, implementation, final evaluation.

A total of 30 meetings of district level staff by CDMO staff. These were, for the most part, half-day events for training, discussions, and general support and consultation. Each successful participant was assigned [illegible] and to each participating village [illegible]. Also [illegible] facilitators are responsible for overseeing the day-to-day implementation and evaluation activities at each school, although [illegible] support to all levels of activities.

In addition to these sessions, a [illegible] was launched in and administered at the end of the project year. Questionnaires were used to examine all the various [illegible] aspects of the project. Some questionnaires [illegible] and the information from each [illegible] to increase [illegible] further.

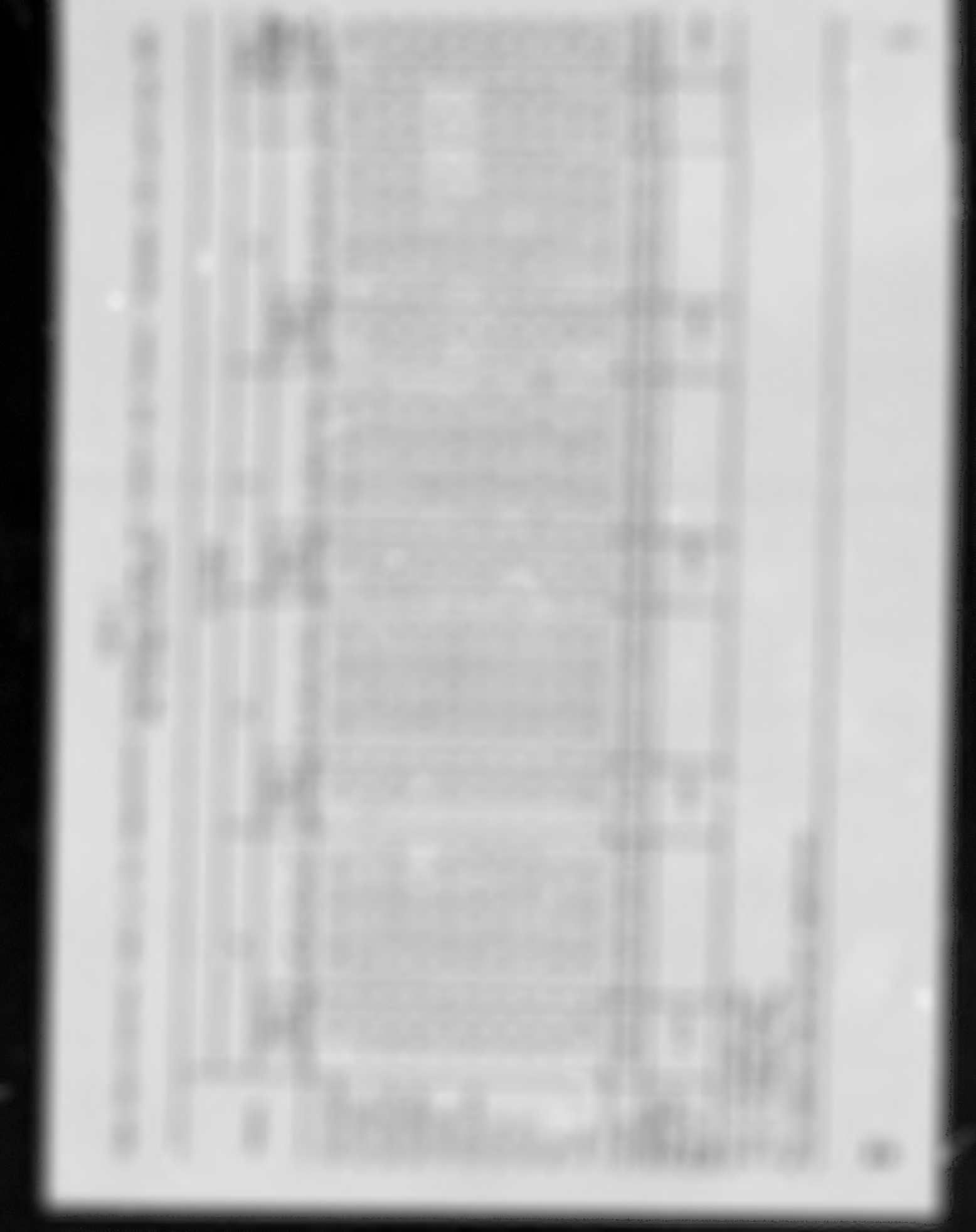
The second group of the instruments was intended to [illegible] the effects of the experiment with the experimental groups on the control ones. In this way, [illegible] to maximize [illegible], if [illegible] problems were [illegible], to begin to evaluate [illegible] to [illegible], materials, and so on. The [illegible] a [illegible], one for users and one for non-users, were developed. Only one interview was developed since it [illegible] according to aspects of the CDMO staff. There were [illegible] to administer [illegible] to [illegible]. Then, with the [illegible] of the instruments was fully [illegible], [illegible] a description of the [illegible] and the bulk of use. [illegible] this according the [illegible] to [illegible].

[illegible]

This [illegible] examines the main body of this report and [illegible] presents investigative [illegible] from [illegible] of [illegible].

[illegible]

With the exception of [illegible] in which there was a change in [illegible] of [illegible], the [illegible] assigned [illegible] responsibility for the project year. As described above, an [illegible], he [illegible], were [illegible] of their time on the project, and one of the four [illegible] was [illegible] by a [illegible]. The [illegible] [illegible] of their [illegible] project time, according to their [illegible], to [illegible] with [illegible]



at the time of use accounts for the "Unknown Time" (U.T.) in Table 1.

If the person requesting the information identified the recipient as a student, the time is counted as "Student Time" (S.T.), whether or not the student was present at the time.[1] "Other Time" (O.T.) is all time the system was used for any purpose other than to provide information for an individual student, and includes demonstrations for groups of students, faculty requests for information, "experimentation" by staff, and demonstrations for in-college and out-of-college visitors.

In interpreting the data in Table 1, note that all use during the first month, September, consisted of training time and demonstrations to staff and faculty; the first use of the computerized information system for individual students occurred in October. As can be seen in the table, for all colleges combined for the entire 10-month year, the system was in use for a total of approximately 507 hours. Of this time, approximately 142 hours or 28 percent of the total time was "Other Time," 10 percent was "Unknown Time," and the remaining 312 hours (62%) was designated "Student Time."

There were differences among the schools: College D, for example, not only used the system for the greatest number of hours (174), but 83 percent of their use was for students, with less than 2 hours of unidentified (U.T.) time. On the other hand, College B used the computer least (44 hours in 10 months). They accounted for only 9 percent of the total yearly use, but approximately 37 percent of all "Unknown Time." Approximately 65 percent of College A's total use was for students, as compared with approximately 42 percent student use at College C. Although College C had devoted the greatest number of hours, about 71 hours (or 50% of the annual total for all colleges) to "Other" uses, all coordinators, with the exception of College B, indicated that demonstrations had been given to, or requests for information processed for, from 4 to 70 members of the community (including previous graduates, neighborhood residents, potential employers). Moreover, the three colleges conducted several demonstrations for their own faculties, as well as making the system available to four-year CUNY, New York City high school, and two-year SUNY staffs.

From Table 1, one can examine monthly use for all colleges combined. As is apparent, October was the month of heaviest use, followed by November

[1] In subsequent analyses, the presence or absence of the student are examined separately.

and April. As could be predicted, use was lowest during semester breaks and in months with many holidays. However, considering the number of different days utilized (57, 41, 84, and 65 for Colleges A-D, respectively), the average time used per day for all colleges combined was fairly low--2:05. Colleges A and D averaged approximately 2:40 a day, while Colleges B and C averaged 1:05 and 1:40, respectively.

To summarize: there were differences among colleges in the number of days on which the system was used; College C used more days, 84, than any other college, although they tended to average less than 2 hours time on any day. A large proportion of their time was for demonstration purposes. College D used the system the most--the greatest number of hours--and on a daily basis averaged somewhat less than 3 hours. College D was very reliable in identifying users and thus ended up with very little "Unknown Time"; most of College D's use was for individual students. College B used the system the fewest days and had the lowest average daily time, almost half of which was not identified. On the other hand, two-thirds of the use in College A was for students; although College A averaged less than 3 hours a day, they are to be considered a relatively active user.

Compared with our secondary school data for a similar time period, these results are disappointing; the high school that made the most use of the system averaged 5:15 daily, while the high school that made the least use averaged 3:15 daily, still considerably greater than the community colleges.[1] Although approximately 62 percent of the total time the colleges were on-line was devoted to processing information for students, again, as compared with the high schools, the colleges tended to devote a very large percentage of time, 28 percent, to demonstrations and training.

Staff Involvement

We had anticipated active involvement of college staff (other than the coordinators) because of the number of training sessions and demonstrations that were conducted for them. However, only at Colleges B and D did the coordinator indicate that there were other counselors or faculty who had been substantially involved. At College B, one counselor was mentioned by name

[1]The reader should consider that higher high school daily averages may, in part, be due to the fact that high schools were usually on-line one day a week and thus, may have been forced to process more information each day.

as a "heavy user." At College D, two counselors had "total" involvement. The observers report that these individuals did, in fact, interact with students and operate the terminal.

According to the coordinators, the attitude of the counseling department toward the computerized project was "neutral" at Colleges A and B, "somewhat favorable" at College D, and "positive" at College C. Furthermore, based on coordinators' reports, 10 percent (College A) to 30 percent (College C) of the counseling department were familiar enough with the system to use it on their own, and were active in referring or following up students.

Student Recruitment and Followup

Publicizing the project in the colleges did not end with demonstrations for members of the faculty: the coordinators employed various means of making staff and students aware of the resource. Their earliest attempts were directed to staff, by way of meetings and workshops (Colleges A, B, C), word of mouth (College B), memos to counselors and program chairmen (College D), and notices in staff (Colleges A, C, D) and student (Colleges A, D) newspapers. (See Appendix D for selected samples of memos, flyers, and news items.) With the exception of College D, the early attempts to attract students through faculty can be characterized as somewhat "cautious." In our opinion, this was largely a function of the coordinators' uncertainty of the types of procedures they needed to establish. Attempts to recruit students frequently preceded resolution of procedures, including arrangements for student orientation, appointments for on-line days, operation of the terminal, and student followup after exploration with the computer.

The coordinators report that they used posters, flyers, notices in the student newspapers, and radio announcements to recruit students. (See Appendix D.) They also relied on word-of-mouth to inform students of the availability of the computer. College D reported that approximately 50 percent of the student users were referred by counselors, 15 percent by other faculty, and 25 percent by students who had used it. College B claimed that 70 percent of its users were referred by counselors and other staff, while the College C coordinator said 60 percent of student users were recruited through presentations made before groups and/or classes of students, and almost all others were referred by counselors. The College A coordinator did not estimate how users were recruited.

Once a student heard about, or expressed an interest in using the computerized system, he was generally required to make an appointment--unless he happened to "drop in" on an on-line day (i.e., on a day the college was assigned to the computer). Theoretically, before a student can request information, he needs some familiarity with what the system offers. The Student Study Guide is the basic source of all this information; it also contains all instructions enabling the user to retrieve the information by himself. In three colleges the student generally reviewed the Student Study Guide at the time he made an appointment; at College B the student first saw the Student Study Guide when he came to the terminal for his appointment. All colleges except College B permitted the student to borrow the Student Study Guide. At Colleges A and B, aides as well as the coordinators were used to explain the computer operation and content to students; at Colleges C and D, this aspect was reserved for the coordinator or a counselor.

Students wishing information can either (1) be present and operate the terminal--process their own requests for information--or, (2) they can be present and have their request processed by someone else, or (3) they can fill out a form and someone else can process the request. We have defined (1) and (2)--instances where the student is present--as a "direct" experience since, in both instances, the student can interact--modify, substitute--with the information. Those cases where the student was not present, either because of scheduling or other reasons, is an "indirect" or "batched" experience.[1]

Although we never observed any instance in which a student sat at the keyboard terminal to retrieve his own information, most students were present at the time their request was being processed. According to the coordinators, no more than 25 percent of the students knew how to operate the terminal themselves. In two colleges, B and D, the coordinators did not consider it important that students know how to operate the terminal; rather, they felt that "the information, not the process, is important" and that "counseling is an integral part of the process." Generally, the terminal was operated by an aide, counselor, or by the coordinator.

Once the requested information has been retrieved from the computer, the

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[1] In the computer-assisted guidance literature, these terms mean that the user obtains his information without coming into contact with any hardware. Usually there is a time delay between the request for and receipt of the information. More importantly, to change the request, the entire process must be repeated.

procedure was to give the student one of the two copies of the printout. At College A the extra copy was sent to the student's assigned counselor; at Colleges C and D the extra copy was filed for future resource purposes. The coordinators' claim that all students that were referred by counselors were instructed to return to their counselor for discussion of the output.[1] When a student was recruited in ways other than counselor referral, the coordinators report that an explanation of the output was done at the terminal by the operator.

STUDENT USE OF THE COMPUTERIZED INFORMATION RETRIEVAL SYSTEM

In this section we will describe the students in terms of the numbers that used the computerized system. We will also report data indicating the kind of information students requested (by file), and the type of interaction they had with the computer. As was done in the preceding section, coordinators' judgments and observational reports will be included where appropriate.

Number of Users

Table 2 summarizes the total number of uses in each college (September through June) and includes the total number of different individual students, users, who participated. Subjective impressions lead us to state that these figures are an underestimate of total student involvement, since all colleges (except College D) failed to consistently provide the necessary information on which individual student identification could be made.

To tabulate the "Total Number of Uses," every use was counted, regardless of whether or not it was the student's first exposure to the computerized system or whether that student had used the system previously. Also counted as separate uses were instances where a student explored more than one file at one session. Since students do return more than once, and interact with more than one file, the total number of uses exceeds the total number of

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[1] We have no estimate of the proportion of students who actually asked for a counseling interview to discuss the computer output. It is our belief, however, that the value of such a discussion is optimized if the counselor is familiar with the structural logic of the system.

occurs over the course of the project.[1]

Table 2

Total number of uses of the computerized information system, by college, September 1974 - June 1975

Month	College				All Colleges
	A	B	C	D	
September	-	-	-	-	-
October	21	10	7	101	139
November	64	10	6	95	185
December	19	5	3	45	82
January	6	3	16	16	41
February	16	3	30	66	125
March	29	2	14	80	125
April	17	0	40	52	109
May	12	2	19	29	62
June	1	0	13	7	21
Total # Uses	183	44	148	473	908
Total # Users	127	23	126	359	635

As can be seen in Table 2, there was (at least) a total of 635 different students (all colleges combined) who used the computerized system a total of 908 times from October to June.[2] Just as there were marked variations in the amount of time the system was used in each college, the number of different students involved also varied considerably, but in relation to the

[1]In addition to students who return more than once, there are "repeaters"--students who return regularly and persistently. Each coordinator reported encounters with such students, but characterized them differently: "industrious and looking for answers"; "following through on careers and colleges"; "more interested in the novel technology than in the actual information"; and "bright, talented, and motivated in more than one field."

[2]Note that these numbers do not discriminate between "assisted" use or direct student use of the system.

[illegible] of "Student Time" in Table 1. The number of different students ranged from 23 in College B to 378 in College D. College D accounted for more than half the total number of students in all colleges combined, and had almost three times as many students participate as did either College B or C. College A tended to maintain a fairly consistent level of use during the month the system was operational, while both Colleges B and D showed an overall decline from the earlier months on. In comparison, College C demonstrated a slight increase in use as time went on.

These data are difficult to interpret without comparative figures either from different colleges or from the same schools using different computer systems. Looking at the figures from different perspectives does not help clarify; for example, the average number of uses per day ranged from 2.6 in College B to 3.4 in College D (Colleges A and C averaged 3.2 and 1.3 uses per day, respectively). Alternately, examining the average length of the interaction--32, 21, 30, and 18 minutes for Colleges A-D, respectively--does not suggest whether the figures represent either efficiency or effectiveness. From a cost point of view, however, the average cost (calculating just hardware and not personnel costs) for the total 828 uses is very high--approximating $10 per use. In a similar two-month period, the approximate cost at the high school level was less than $1 per use--a difference attributable only to the great number of high school students exposed to the system.

Grade Level of Student Users

Table 1B.(7) presents data describing use by student category. In interpreting these data, the reader should remember that the computer being serves, like all other descriptive information about the students as others who used the computerized system, is based on what was input at the terminal at the time of use. As has been pointed out, the small number of student users and the large amount of student use is embarrassing, perhaps accurately, as a result of the fact that three of the colleges were not habituated to the identification procedures. The data in Table 1 also suffers from distortion, but the nature of this data is such that the skewed information is probably distributed equally across computer level.

Since the principles for use of the computer system did not specify grade level, the coordinators had complete choice toward whom they directed

Table 3

Net NOX Exchange, Proportion of Auction Units, by Generator
(Figures in Percentages)

Generator[a]	Exchange				Net Exchange
	A	B	C	D	
Plant	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Bonded	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Retail	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Peaker	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
More than 1 plant	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Unknown	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total Volume	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[a]Maximum incorporation of auction source data given in the Administrative Data Base was in the region of the combined cycle type of unit.

[b]Exchange D operates as a quarterly scheduled offer.

these assessments different. From the proportions in Table 3, it is difficult to discern an any predetermined relationship between the weight of auction-based offers. As far as we have been able to determine, an exchange has a specific campaign for particular groups of customers. We do know from table 3 that exchange D, for example, announces the longest projection of firm resource available, while exchange A seemed to announce those non-firm resource available to approximately equal numbers.

In response to a questionnaire item, the coordinators noted in quite that some divergent practices, there is there there and there's apparent, noted in there's even from the responsible regulators. Furthermore, according to coordinators' reports, higher bidding customers, especially at the time "peak production," seem to get more from the resource than those at lower bidding. The coordinator-coordinators also indicated that it is rather appropriate the response that "that" appear as in this coordinate or subscribe. We will probably

[illegible][1]

[illegible]

[illegible] [illegible] [illegible] [

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Table 7

Proportion of Uses of the Computerized System, All Files Combined, in Which Students Were Present (Direct) or Not Present (Batched) (Figures in Percentages)

Type of Experience	Colleges				All Colleges Combined
	A	B	C	D	
Direct	58	23	88	59	63
Batched	2	45	5	40	25
Unknown	40	32	7	1	12
Total N Uses	183	44	168	473	868
Total %	100%	100%	100%	100%	100%

[a]The designation of the type of use is derived from the identification information input at the time of use; thus the "Unknown" category includes those uses for which there is no information available.

for decision-making rests with the person operating the terminal. While this can happen when the student is present and does not understand what is happening, it is more likely to occur when the request was batched. Furthermore, when the student is not present, certain other problems are created. These include returning the output to the student, interpreting the output, and arranging another appointment for use of the system should the student desire to modify some of the input characteristics.

The coordinators report that approximately 95 percent of the students whose requests were batched did receive followup explanations and interpretations of the output. This was generally accomplished by scheduling an appointment with the student's counselor or the project coordinator, and was initiated by both the project staff or by the student himself.

The coordinators of Colleges B and D made the point, very forcefully, that understanding the system was not important, but that the information retrieved was. They stated that the counselor had the responsibility for translating the output to the student. While the remaining two counselors tended to agree, both indicated that "it is always better for the student to understand."

THE TSC GUIDANCE INFORMATION SYSTEM

To help separate reactions to the specific system used in this demonstration project (the Time Share Corporation [TSC] Guidance Information System) from the more generalized concept of "computerized guidance," the coordinators were asked to maintain records and to respond to several questions on an end-of-year questionnaire. In this section, we will present data on the attributes of the TSC system as it relates to the needs of the college student and counselor.

TSC Materials: Student Study Guide and User Manual

There was consensus on the part of coordinators that the reading comprehension level of the Student Study Guide was at the average level of difficulty, although it was "too involved" for their students.[1] They found the commands (instructions) "complete but confusing" and the format of the presentations was generally rated "unsatisfactory." At Colleges A and C, the Student Study Guide was revised--shortened and simplified. In both instances the attempt was praiseworthy, although the actual revisions were judged by IRDOE staff to be less than adequate. For example, the revisions contained only selected characteristics, thereby limiting a student's input options. In our opinion, the attempted revisions suggest a degree of unfamiliarity with the purpose of the project and, in the case of College C especially, less than complete understanding of the logical nature of the system. (See Appendix F for sample of revised materials, including a shortened index developed by IRDOE staff.)

As far as constructive comments, the coordinators felt that illustrations, including pictures of the terminal, would be helpful. One suggested that the least used commands be eliminated entirely,[2] while another indicated the definitions should be simplified. One staff member thought the Student Study Guide and User Manual should be consolidated.

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[1]The reader should keep in mind that this system and materials were developed for secondary school students; as far as we have been able to determine, this is the first time they have been tried at the postsecondary level. Our high school data all suggests that the written materials are difficult.

[2]The "S" command, "Consider everything except..." was not well understood by one or two of the college coordinators.

College Files

Coordinators were asked several questions about the information in, and structure of, the two-year and four-year college data banks. Two coordinators, Colleges B and C, felt the categories of characteristics were "fine as they were," and did not suggest any modifications. Coordinators at Colleges A and D felt that some categories were "irrelevant"--probably meaning that, in their opinion, they were not of much use to students. They suggested that the college data banks could be improved by collapsing some categories, deleting others (such as coeducation and size of nearest city), and adding still other categories (such as differential ratings of departments within a college, and a special code for retrieving schools in the greater metropolitan area).

During the course of the demonstration year, the coordinators and their aides were asked to keep records on forms we provided to describe adequacy of the information in the computer system. A total of 9 forms were completed, 5 of which related to the quality of the college files. Four of the comments related to majors specifically; certain colleges were not printed out when majors, known to be offered, were input. (The fifth Information Rating Card included a comment indicating unfamiliarity with one of the commands used to instruct the computer.)

In general, the coordinators agreed that the college data banks were logically structured and easy for the students to interpret. They felt they were complete in that they contained most two-year and four-year colleges. The overall indication was that the information contained was generally accurate--with the only noteworthy exceptions being majors offered. Since they were most familiar with the CUNY system, they found most errors there. They would not change the decision to limit an output list to 25 items, "25 options were adequate." They agreed that it would be helpful and useful to have available other types of postsecondary institutions such as business, trade, and technical as well as other vocationally-oriented training opportunities (e.g., paralegal courses).

Occupational Data Bank

The coordinators were asked to rate the categories in the occupational data bank that are used in a search for lists of occupations. Each category was to be rated on whether the explanation was clear or misleading; on

whether the category was complete or incomplete; whether it was logical or illogical; and whether the category was relevant or irrelevant. A 3.0 rating is positive, while 1.0 is a negative rating. The average ratings for the four coordinators is summarized in Table 8. As can be seen in the

Table 8

Average Ratings of the TSC Occupational Categories Used in a Search
(3.0 = Positive, 1.0 = Negative Average Rating)

Occupational Categories, Grouping By:	Clarity	Completeness	Logical	Relevance	Average (by row)
Clusters	2.2	2.2	2.7	3.0	2.5
Industrial Level	2.7	1.5	2.5	2.7	2.3
Interests	2.5	1.7	2.7	2.2	2.2
Aptitude	2.7	3.0	3.0	2.7	2.7
Level of Formal Education	2.7	2.7	2.7	2.7	2.7
Vocational Training	2.7	2.2	2.2	2.5	2.4
Other-than-Formal Training	2.2	2.0	2.5	2.5	2.3
Average (by column)	2.6	2.1	2.6+	2.6	

table, the categories of "Interests," "Industrial Level," "Other-than-Formal Training," and "Special Vocational Training" were rated overall more negatively than positively. They were viewed as incomplete, illogical, and unclear. On the other hand, "Aptitudes" and "Formal Education" categories were rated as clear, complete, logically structured, and relevant.

When asked whether this seven-category group allowed a user enough choice, two coordinators, Colleges A and C, felt these were adequate for searching; the remaining two felt that they would like to see such things as "job setting" and "places which training could be obtained" added. When asked whether the sample of occupations (approximately 1300) that were stored in the computer reflected those occupations their students were interested in, the coordinators were divided: Colleges B and D felt they were inclusive,

while the coordinators at Colleges A and C suggested reducing the number of manual and agricultural occupations and including more "helping" occupations (specifically mentioning art therapist and mental health therapist) as well as more occupations requiring longer-range training. Reflecting the fact that the TSC system was designed for use nationally, coordinators of Colleges A and C suggested more regionalized statistics, specifically in terms of salary ranges and employment outlook.

REACTIONS TO [illegible] COMPUTER EXPERIENCE

As part of the assessment of this project, IRDOE staff proposed to measure the effects of the experience on student users. To this end, a Student User Interview Inventory was prepared in the early Spring, with administration planned for May. The basic purpose of this inventory was to determine how students learned about the system, their reactions to the experience, and how satisfactory it was in comparison to alternative forms of obtaining similar information. This User Interview was to be conducted by the IRDOE staff assistant assigned to each school. After several visits to the various campuses, during which time no student was scheduled for the computer, it was decided to design an alternate form for those students who came to the resource center in which the computer terminal was installed but who did not avail themselves of the opportunity to use the computer. Again, the purpose underlying the questioning of non-users was an attempt to find out how they heard about the alternative resources and what they intended to do with the information they got.

By May, not only had use fallen off (only about 7 percent of all use occurred in May as compared with, for example, 15 percent in February), but apparently the number of students who also came to the resource centers decreased drastically. After six half-day visits, only one interview had been completed, and we decided not to continue this aspect of the evaluation. Instead, for indication of the effects of the computerized experience on students, we have to rely almost completely on the coordinators' reports to us.

The coordinators rated student reaction as "positive" or "extremely positive." The College C coordinator felt that students were more realistic after using the computer, and were more aware of the number of options available to them. The other colleges gave specific examples: at College B

at least one student, a psychology major, "discovered" social services and is now opting for a social work career. A student at College A who "liked both science and the idea of helping people" found out from the computer that the public health professions might satisfy both interests.

Less direct effects on students and others,[1] as reported by the coordinators, included such things as the following: at College A many students began to appreciate the fact that it was important to learn about themselves. The College B coordinator indicated that, as a bonus, the project improved the communications between faculty members who referred students and the counseling staff. Similarly, the College C coordinator noted that students, through this medium, were helped to interact constructively with the counseling staff. At College D the coordinator was particularly impressed with the fact that "students became aware of a wide range of college services that they didn't know existed."

We were also concerned with the attitudes of counselors toward this project, and asked the coordinators to rate the attitudes of their colleagues. The counselors' attitudes at College C and D were rated as more positive than those at Colleges A and B, whose attitudes were described as "neutral." It is interesting to note that there seemed to be a relationship between these ratings and coordinators' estimates of the percentage of the counseling staff who were familiar enough with the system to operate it on their own. The larger the proportion of counselors who could (and did) operate the terminal were also the staffs whose attitudes were rated more positively.

The responses of administrators can only be inferred. As evidenced by their interest in continuing the project, their perceptions seem to be quite positive. The College C liaison, however, said "everyone in the school liked it enormously." In College D the project was described as "extremely valuable." Despite the reported satisfaction, everyone expressed some reservations. The written reservations, as far as we can interpret, seem to relate more to the defects and inadequacies of the time share computer system than to the general concept of automated information retrieval.

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[1]One serendipitous effect--at College B, as student aide who manned [sic] the terminal in the morning, met and married the student aide assigned afternoons.

[redacted]

[redacted]

For the 1970-71 year, the CUNY Institute for Research and Development in Occupational Education (IRDOE) conducted a pilot project to study the feasibility of employing a computerized assistant system for career and college information in four community colleges of the City University of New York. Selected to represent the diversity of two-year institutions, the participating colleges agreed to support the demonstration effort by making staff available, absorbing telephone costs, and agreeing to the data collection activities designed by IRDOE staff to monitor the progress of the effort and describe its successes and problems.

After investigation of discussion support systems purporting to provide occupational and educational options, the project staff decided to use the Guidance Information System (GIS) developed by Time Data Corporation (TDC). In addition to our familiarity with this system, comparisons with other computer systems led us to conclude that the TDC program was appropriate in terms of its size, flexibility, and relevance to the populations served in this demonstration. Part of the evaluation effort was to be directed to obtaining sufficient data to enable differentiation between the effects of this particular system and the generalized concept of computerized information dissemination.

Although all colleges did meet their obligations to the extent of designating a counselor to act as coordinator-liaison, each provided selected them for the increased responsibility. Thus, colleges A, B, and C each had use of student aides, generally work-study students, to maintain the project--to schedule appointments for students, to keep track of the various evaluative forms and questions, and to operate the terminal. Although all counselor-coordinators were very conscious of and concerned with the "politics" aspects of this simple information retrieval package, all too often the aides were shunted interacting with other students in a "guest" counseling role. However, in addition to requiring supervision, use of student aides increased the need to provide training and scheduling, and introduced supervisory problems. Furthermore, differences in motivation, coupled with idiosyncratic styles in the application of the basic service concepts and techniques, led to wide variations in how the system was implemented at the four colleges.

[illegible]

APPENDIX B

Evaluation Instruments (Monitoring Component)

1. Hardware Monitoring Checklist
2. a) User Sign-In Log
   b) Terminal Sign-In
3. Information Rating Card

APPENDIX B-1 9/74

HARDWARE MONITORING CHECKLIST

Computer-Assisted Guidance Project

Dear CAG Liaison:

The accurate and consistent noting of information describing problems or difficulties encountered in the use of computer-related hardware (telephone, teletypewriter terminal, and computer itself) is important in assessing the feasibility of a computer project, the reliability of the various vendors involved, and any problems unique to a particular school.

To minimize recordkeeping, we have developed the appended Hardware Monitoring Checklist form which includes the range of possible potential problem areas. We have provided enough of these forms so that a new one should be used for each on-line day.

The first column, headed MALFUNCTION, describes various problems or symptoms of problems. An "Other" category is provided for difficulties we may not have anticipated; if you use the "Other" category, please describe the nature of the problem.

The second column requires a check (√) ONLY if YES, there was such a problem.

Column three, DURATION OF PROBLEM, asks you to describe whether the problem was intermittent (on and off as, for example, "garbage") or uninterrupted or continuous; we are also asking you to estimate the time the problem started and ended.

In the next column, ESTIMATED TIME LOST, fill in the total time--if any-- lost to that day's operation. (It is possible, as with intermittent "garbage," for no time to be lost; that is, despite jumbled letters, the copy is legible overall.)

In the following column, check YES, ONLY if there was a malfunction and you had to call Time Share Corporation's (TSC) Customer Control number (603) 643-2000 person-to-person collect for Herb Cornell.

The next to last column requires a YES check (√) if TSC called you back promptly.

The final column is for comments about the problem's resolution; if you need additional space, use the back of the page for that day.

Indicate if there were no problems that day with a check in the box in the upper right hand corner.

We will be collecting these forms every couple of weeks; if you have any suggestions or questions, please call me at (212) 354-2251 or 2280. Thank you for your assistance.

Barbara R. Heller
Project Director
Institute for Research and Development in
Occupational Education (IRDOE)

HARDWARE MONITORING CHECKLIST

CAC-IRDOE

COLLEGE _____

DATE _____

If no malfunctions occurred on this day, check here / /

MALFUNCTION (Symptoms)	√YES, Malfunction	DURATION OF PROBLEM If intermittent from	to	If uninterrupted from	to	ESTIMATED TIME LOST (if any)	√YES, Called TSC	√YES, TSC Called Back Promptly	HOW WAS PROBLEM RESOLVED? (e.g., TSC provided alternate no., never resolved)
1. Access telephone number yields a BUSY SIGNAL									
2. NO DATA SIGNAL is heard on the phone.									
3. Telephone CONNECTION Problems (faint connection, accidently broken connections, etc.)									
4. Power on, light on, but NO ACTIVITY.									
5. Power on, data signal o.k., DATA LIGHT OFF or FLICKERING.									
6. NO Power, No Light, No Noise.									
7. KEYBOARD LOCKED (Power ON).									
8. Teletypewriter PRINTS OVER ITSELF.									
9. Teletypewriter PAPER JAMS									
10. Teletypewriter PRINTS "GARBAGE."									
11. PASSWORD rejected.									
12. CUTOFF in middle of Program.									
13. OTHER: Describe									

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APPENDIX B-2a

CC: 9/74

Computer-Assisted Guidance Project

USER SIGN-IN CHECKLIST

Dear CAG Liaison:

The computerized system we are trying out this year can automatically provide some of the data we need for evaluative purposes and we are experimenting so that more of this information can be automated. At this point in time, however, we cannot automatically record data on the number of different people--staff or students--using the system, nor the number of uses of the four data banks (files).

Since this information is basic to our assessment of the project, we have developed the attached USER SIGN-IN CHECKLIST. To help insure that the information is collected regularly, please keep these forms at or near the teletypewriter terminal installation.

As far as the Checklist itself, the DATE column is, of course, self-explanatory.

The next column, STUDENT I.D., requires the identification number of the student user so that we may ascertain the effects of CAG on such things as choice of or changes in curriculum, and so on. Please record the I.D. number in the sequence with which the computer was used that day. When a non-student (staff, parent, etc.) uses the system, use the I.D. column to describe the user and the purpose: the purpose can be demonstration, experimentation, etc.

The third heading is SEMESTER; this requires a check to describe the student's current semester status, with an "other" column available for indicating the 5th, 6th, or any other designation which will permit a description of the number of semesters the user has been in the college.

The CURRICULUM column was designed so all participating institutions would provide similar data; a check is required to indicate whether the student user is a Technology (Tech.), Health, Business (Busin.), or Associate of Arts (A.A.) major. If none of these categories apply, check the "other" column and use the back of the page for explanations. A non-matriculated column is provided for students in extension, evening programs.

The next column requires a check to indicate whether or not the student was present when his request for information was being processed.

Finally, a FILE column has been provided. Since a user may request information from more than one file at one sitting, a check in the appropriate spaces will indicate whether he used the

OCCU or Occupational Information File;
COL 4 or the Four-Year College Information File;
COL 2 or the Two-Year College Information File;
SCHO or the Scholarship Information File.

We will try this form for a month or so and at the same time experiment with collecting similar information automatically (see CAG TERMINAL SIGN-IN INSTRUCTIONS). If the required information is available to use directly from the computer, we will let you know and then dispense with this SIGN-IN CHECKLIST. In the meantime, please use this form.

If you have any questions, or suggestions for improvement, please contact me at 354-2280 or 354-2250. Thank you.
51 80

Barbara R. Heller, Project Director
Institute for Research and Development in
Occupational Education

USER SIGN-IN CHECKLIST

CAG/IRDOF

DATE	STUDENT I.D.	SEMESTER					CURRICULUM						Was the student present when request was run?		FILE (Check as many as apply)			
		1	2	3	4	Other (explain)	Tech.	Health	Busin.	A.A.	Other (explain)	Non-Matric.	PRESENT (Direct)	NOT PRESENT (Batched)	DCCD	CDL 4	CDL 2	SCHD

Computer-Assisted Guidance Project

CRT TERMINAL SIGN-IN INSTRUCTIONS

With the help of Time Share Corporation (TSC), we have devised a system of collecting user identification information directly from the computer. If this system works effectively, we will be able to do away with the Sign-In Checklist log form.

It has been arranged so that the computer can handle (that is, will not reject) anything typed between 'single quotes' or apostrophes (the shift-7 key on the terminal). Therefore, we would like you to type in, within single quotes, the information we need about each user.

Attached is a card with detailed instructions.

Use both this system and the Sign-In Checklist form until we decide whether the system works accurately. If there are any questions, please call me.

Barbara R. Weiher, Project Director
Institute for Research and Development
in Occupational Education

784-2251, 2260

[illegible]
(Group A: [illegible])

Before each use by an individual, type in the following:

1. Start with a CLEAN [illegible] (use the shift-F key) *

2. Within the game, type:
   a. [illegible]
   b. [illegible] (1st, 2nd, 3rd...)
   c. [illegible] (Tech., Health, Econ., E.A., Other, Non-Econ.)
   d. [illegible] (if student was not present) or [illegible] (if student was present)

3. Close [illegible] (use the F-shift key) *

4. Read the message: [illegible]

5. If a user other than a student in your college is involved, type in enough information within the single game to identify him (e.g., faculty or postdoc), his affiliation (school or college), and the purpose of the use (e.g., [illegible], personal, experiment).

3. What CAI demonstrations or discussions, if any, have you had with staff from other CUNY colleges?

Personal visits (specify approximate number and colleges) _____

_____

Phone inquiries (specify approximate number and callers) _____

_____

Letters (specify number and writers) _____

Other _____

4. Please make use of this space to describe other outside activities not covered:

SECTION VI - TRAINING AND MATERIALS

In September 1974, representatives of the Institute for Research and Development met with you and several other staff to hold orientation and training session(s).

1. After the training session(s), did you feel able to operate the system:

_____ with complete comfort? _____ with some comfort?

_____ with some uncertainty? _____ with great uncertainty?

2. Did you feel more training was necessary?

_____ No _____ Yes; if yes, specify what kind: _____

_____

3. How long did it take you to feel completely comfortable in operating the terminal?

_____ A couple of days _____ A week or two _____ Longer (please specify)_____

_____

4. Please indicate when a student usually first sees the Student Study Guide (e.g., when making an appointment, when arriving at his appointed time to use the terminal, etc.): _____

_____

5. Are the students permitted to borrow the Student Study Guide?

_____ No _____ Yes

6. The Student Study Guide is a basic tool to the use and understanding of this system. Please rate its overall adequacy in terms of the typical student user at your school:

Reading comprehension level:

easy for the average student	at the average student level	hard for the average student

Definitions of commands and instructions (A,S,E/P,I, etc.):

incomplete	complete but confusing	complete and understandable

Format (layout and arrangement):

poor	unsatisfactory	satisfactory	good

7. In your opinion, is there anything missing from the Student Study Guide and/or User's Manual that should appear or that needs to be revised? (Consider, for example, whether a picture of a terminal would be helpful, whether new commands would be useful, whether "remedies" for malfunctions could be more usefully described, etc.)

8. Did you revise and/or abbreviate the Student Study Guide or the summary sheets in the back of the book?

_____ No _____ Yes; if yes, specify what you did and whether it was effective:

_____

_____

SECTION VII - COLLEGE FILES

1. In your opinion, should any of the categories of characteristics in the two-year and four-year college data banks be combined? (e.g., too many co-ed options, too little on competitiveness)

_____ No _____ Yes; if yes, which would you suggest? _____

2. In your opinion, what additional categories of characteristics could improve the college files?

3. Overall, do you think the four-year and two-year college input (i.e., selectors, characteristic groups) are logically structured and easy for students to interpret?

_____ Yes _____ No; if no, please explain: _____

_____

4. The decision to print 25 or fewer qualifying options is arbitrary. In general, does this permit the student user enough choice?

_____ Yes, enough _____ Too many _____ No; if no, how many would you suggest, and why? _____

_____

5. Have you found most two-year and four-year colleges that you feel should be in the data bank are in fact included?

_____ Yes _____ No; if no, what omissions have you found? _____

_____

6. The college files do not include other postsecondary, non-college educational institutions. Do you feel any such institutions should be included?

_____ No _____ Yes; if yes, what types? _____

7. Have you found many errors in the information provided?

_____ No _____ Yes; if yes, indicate the particular types: _____

_____

SECTION VIII - OCCUPATIONAL FILE

The Occupational File is somewhat different than the college files--it has categories of "selectors" (input) and categories of "descriptors" (output). The first question lists categories of selectors and descriptors and asks that you rate each major category on the dimensions below, using the code number you find appropriate. (You might need to go back to the Student Study Guide, pp. 15-25, to refresh your memory of what is included in each section.)

1. DIMENSIONS and definitions	CODES and meanings
DESCRIPTIVE EXPLANATIONS of major categories and subgroups. (Do the explanations describe, differentiate between items?)	1 = Misleading 2 = Vague or ambiguous 3 = Clear
COMPLETENESS of subgroups within the major categories of selectors and descriptors. (Do the subgroups of, for example, interests exhaust necessary possibilities?)	1 = Incomplete 2 = Somewhat incomplete 3 = Generally complete
LOGICAL ORDERING of occupations. (Do the occupations seem to belong to the characteristics asked about? That is, e.g., are the occupations logically classified?)	1 = Illogical 2 = Somewhat illogical 3 = Generally logical
RELEVANCE of information. (Overall relevance of the categories and sub-items to students, regardless of TSC's treatment.)	1 = Not relevant 2 = Somewhat relevant 3 = Generally relevant

Characteristics	Explanations	Completeness	Logical	Relevance
Selectors (p. 15-19)				
15 Occupational Clusters				
Occupations within Industries				
Interests				
Aptitudes				
Formal Education				
Special Vocation Training				
Other-than-formal Training				
Descriptors (p. 19-25)				
15 Occupational Clusters				
Occupations within Industries				
Interest				
Aptitudes				
Formal Education				
Special Vocation Training				
Other-than-formal Training				
Areas of Work				
Employment Outlook				
Work Activities				
Working Conditions				
Physical Demands				
Other Qualifications				
Entry Level Earnings				
Highest Level Earnings				
Special Conditions				

-20-

2. In your opinion, are there additional major categories of occupations which might be included in an occupational file?

_____ No _____ Yes; if yes, which? _____

3. Are there any additional major categories of descriptors that might be included in an occupational file?

_____ No _____ Yes; if yes, which? _____

4. Overall, in terms of searching for an occupation from the data bank, how understandable is the structure and content of the occupational file to the average student in your school?

very confusing	somewhat confusing	generally understandable	very easily understandable

5. The occupations in the data bank consist of a sample of occupations in the D.O.T. Does this sample include most of the types of occupations which students are interested in?

_____ Yes _____ No; if no, list significant areas of omission: _____

_____

6. Does this sample of occupations include ones not appropriate or not diverse enough for students? (Consider jobs of too low or too high a level, sex stereotypes, etc.)

_____ No _____ Yes; if yes, please specify: _____

_____

7. The TSC system is designed to be used nationally. Does this limit the value of the occupational file for your students?

_____ No _____ Yes; if yes, how? _____

_____

SECTION II - EFFECTS ON STUDENTS

1. In your opinion, what proportion of students who have requested information completely understand:

How to do a search? 25% 50% 75% 100%

The availability of four files? 25% 50% 75% 100%

How to operate the terminal themselves? 25% 50% 75% 100%

2. Do you think it would be of significant benefit if students themselves understand the system complexity rather than relying on as much help as they now get?

_____ No; why? _____

_____ Yes; why? _____

3. Overall, in your opinion, what types of students benefit most from CAI? Please be specific in terms of:

Semester(s) _____

Ability level _____

Aspirational level _____

Curriculum (transfer or career) _____

Other _____

4. Overall, in your opinion, what types of students benefit least from CAI? Please be specific in terms of:

Semester(s) _____

Ability level _____

Aspirational level _____

Curriculum (transfer or career) _____

Other _____

5. Have you had any instances where students were resistant to "computerized" information retrieval?

_____ No _____ Yes; if yes, how was it manifested? _____

_____

6. Have you had any instances of "repeaters"--students who return regularly and persistently?

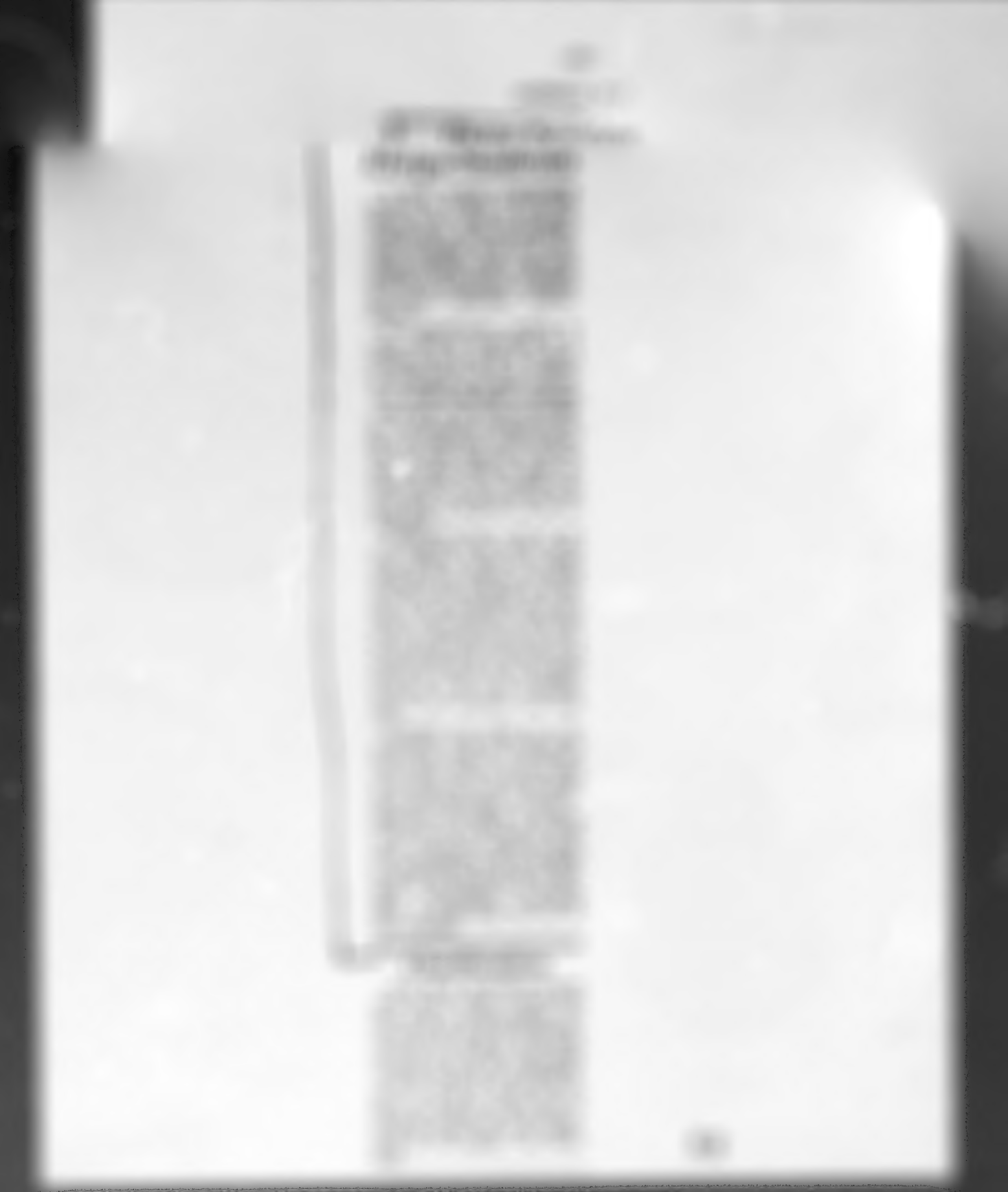
_____ No _____ Yes; if yes, how would you characterize them? _____

_____

7. Approximately what percentage of the students who use CAI have their requests batched (i.e., run while they are not present)? _____

8. What directions or instructions do you give to a student when his request is batched, and there are too many qualifying options to print or use them--code-- options?

observer



Career-Concerned?

Come to M 257 - The Career Advisory Center (CAC)!

If you are concerned about

- ...exploring careers
- ...the job outlook in a career field
- ...starting salaries, advancement
- ...learning about options for further training or education

Make a date to visit CAC today!

Hours: 9:30 am to 8:00 pm Monday through Thursday
9:30 am to 4:30 pm Friday
11:00 am to 3:00 pm Saturday

Computer Information: Monday, Tuesday, and Saturday ONLY

APPENDIX E

Sample of Effort to Adhere to Priorities for Recruiting Students

APPENDIX E

STATEN ISLAND COMMUNITY COLLEGE

THE CITY UNIVERSITY OF NEW YORK

To All Counselors

From Paul M. Siegel, Campus Coordinator
Computer-Assisted Guidance System
Date October 21, 1974

Subject Student Priorities for use of Computer time

I have noticed so far that many of the students referred to me to retrieve data from the G.I.S. are liberal arts students. I wish to convey to you the importance of informing your non-liberal arts students who are in need of changing career goals and/or making four year college decisions that the system is available to them on a priority basis.

Due to the nature of this research project, liberal arts students are last on the priority list as outlined in my previous memos. This is not to say however, that liberal arts students should not be referred. They should, of course, be referred when it is indicated in the counseling process. However,, try to emphasize the use of the system to your non-liberal arts students.

715 Ocean Terrace / Staten Island / New York 10301 (212) 390-

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